LISTING OF THE CLAIMS:

1. (Currently Amended) An optical connection device for optically coupling at least one optical waveguide in which light propagates to at least one optical element disposed outside the optical waveguide, the optical connection device comprising:

the optical waveguide provided in a board so that an optical axis thereof is parallel with a board surface, a part of the optical waveguide being removed so as to form a groove along a plane angled at a predetermined angle to the optical axis of the optical waveguide;

the optical element opposing ~~to~~ the groove of the optical waveguide so that an optical axis of the optical element intersects with the optical axis of the optical waveguide; and

an optical unit arranged at a position of intersection of the optical axes of the optical element and the waveguide for turning light by reflection from one of the optical axes of the waveguide and the optical element along the other of the optical axes; wherein the optical unit is fitted to the groove such that a surface of the optical unit is guided by a surface of the groove.

2. (Original) An optical connection device according to Claim 1, wherein the optical element is mounted on a surface which is parallel with the board surface at a predetermined distance apart therefrom.

3. (Original) An optical connection device according to Claim 1, wherein the optical element is a light-emitting element.

4. (Original) An optical connection device according to Claim 1, wherein the optical element is a photodetecting element.

5. (Original) An optical connection device according to Claim 1, wherein the optical unit for turning light is either of a prism and a mirror.

6. (Original) An optical connection device according to Claim 1, wherein the optical element and the optical unit for turning light are integrated into a single body so as to be aligned to each other, and the single body is fitted into the groove, thereby coupling the optical element to the optical waveguide.

7. (Original) An optical connection device according to Claim 1, wherein a plurality of the optical waveguides are coupled to a plurality of the optical elements forming an optical element array, and

the optical element array is mounted on a surface which is parallel with the board surface at a predetermined distance apart therefrom.

8. (Original) An optical connection device according to Claim 1, further comprising a light-condensing unit interposed between the optical element and the optical unit for turning light. .

9. (Original) An optical connection device according to Claim 2, further comprising a light-condensing unit interposed between the optical element and the optical unit for turning light.

10. (Original) An optical connection device according to Claim 3, further comprising a light-condensing unit interposed between the optical element and the optical unit for turning light.

11. (Original) An optical connection device according to Claim 4, further comprising a light-condensing unit interposed between the optical element and the optical unit for turning light.

12. (Original) An optical connection device according to Claim 5, further comprising a light-condensing unit interposed between the optical element and the optical unit for turning light.

13. (Original) An optical connection device according to Claim 6, further comprising a light-condensing unit interposed between the optical element and the optical unit for turning light.

14. (Original) An optical connection device according to Claim 7, further comprising light-condensing units forming a light-condensing units array, each of which is interposed between the corresponding one of the optical elements and the optical unit for turning light.

15. (Currently Amended) An optical connection device comprising:

a board;

first and second optical waveguides formed in the board so that optical axes of the first and second waveguides are parallel to a surface of the board respectively;

each of the first and second optical waveguides having an end surface exposed to a common groove portion angled at a predetermined angle to the optical axes of the first and second optical waveguides respectively;

a photodetecting element disposed outside the first optical waveguide;

a light emitting element disposed outside the second optical waveguide; and

an optical unit disposed in the common groove portion for turning light output from the first optical waveguide to the photodetecting element and for turning light emitted from the light-emitting element to the second optical waveguide,

wherein a first optical signal propagated through a first optical waveguide is input into the photodetecting element,

the optical signal is converted into an electric signal, and a predetermined transformation is applied to the electric signal,

the light-emitting element is driven according to the electric signal after the transformation, and

light emitted from the light-emitting element is coupled to a second optical waveguide as a second optical signal.

16. (Original) An optical connection device according to Claim 15, wherein the photodetecting element and the light-emitting element are mounted on a surface which is parallel with the board surface at a predetermined distance apart therefrom.

17. (Original) An optical connection device according to Claim 15, wherein the optical unit for turning light is a polymorphic prism.

18. (Original) An optical connection device according to Claim 15, wherein at least one of the photodetecting element and the light emitting element and the optical unit for turning light are integrated into a single body so as to be aligned to each other, and the single body is fitted into the common groove portion, thereby coupling the at least one of the photodetecting element and the light emitting element to the corresponding one of the first and second optical waveguides.

19. (Original) An optical connection device according to Claim 15, further comprising a light-condensing unit interposed at least between the light-emitting element and the optical unit for turning light.

20. (Original) An optical connection device according to Claim 16, further comprising a light-condensing unit interposed at least between the light-emitting element and the optical unit.

21. (Original) An optical connection device according to Claim 17, further comprising a light-condensing unit interposed at least between the light-emitting element and the optical unit.

22. (Original) An optical connection device according to Claim 18, further comprising a light-condensing unit interposed at least between the light-emitting element and the optical unit.

23. (New) The optical connection device according to Claim 1, wherein the optical unit is a prism and the prism agrees with the shape of the groove.